

# THE MINERAL INDUSTRIES OF THE SOUTHERN BALKANS

## ALBANIA, BOSNIA AND HERZEGOVINA, CROATIA, MACEDONIA, SERBIA AND MONTENEGRO, AND SLOVENIA

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Europe's Southern Balkan region is part of the southern portion of the Mediterranean Alpine folded zone, which extends through the Dinarides of the former Yugoslavia (Bosnia and Herzegovina, Croatia, Macedonia, Serbia and Montenegro, and Slovenia), the Albanides of Albania, and the Hellenides of Greece. Mining for base and precious metals may be traced through historical records to at least 5 B.C. Evidence of early workings at the Bor copper deposit in Serbia suggest prehistoric origins.

From the early 1930s to 2002, mineral deposits in the region were well-defined. Commercial resources of major base metals include those of aluminum, chromium, cobalt, copper, iron, lead, magnesium, manganese, nickel, and zinc. Such precious metals as gold, palladium, platinum, and silver were found mainly in association with such base metals as copper, lead, and zinc. Industrial minerals include clays and volcanic materials and a broad range of carbonate and silicate rocks, gravels, and sands. Mineral fuels comprised coal (lignite), natural gas, and petroleum.

Until the early 1990s, the mining, processing, and downstream use of base metals established the region as a major European source of copper, lead, and zinc and a major world producer of chromite. The transition of the region from central economic planning to market economy systems between 1991 and 2001 also began a swift deconstruction of existing political and social structures. The ensuing political, social, and ethnic tensions and conflict destroyed or degraded much of the region's mineral industries and industrial infrastructure. In 2002, political and social tensions in the Province of Kosovo in Serbia and Montenegro and in Macedonia appeared to have abated.

The future status of the minerals industries in the countries of the South Balkan region would be clarified following political settlement and normalization not only among the states in the region, but also within such neighboring countries as Bosnia and Herzegovina, Croatia, Macedonia, and Serbia and Montenegro.

### ALBANIA

Mineral deposits that traditionally have been associated with Albania include those of chromite, copper ore, nickeliferous iron ore, natural gas, and petroleum. In 2002, of the metal-bearing deposits, only chromite was mined. From the 1960s through the late 1980s, Albania was among the world's top three producers and exporters of chromite. Although Albania's chromite output remained insubstantial compared with routine production levels reached during the 1960s through the late 1980s, the output of marketable chromite (concentrate and direct shipping ore) increased by about 6% in 2002 compared with that of 2001. The output of ferrochromium also showed recovery with an 86% increase compared with that of 2001 (table 1).

Dolomite, gypsum, marble, phosphate rock, and other industrial mineral deposits have been worked only intermittently during the past several years. The production of natural gas, coal, and petroleum declined by about 17%, 11%, and 11%, respectively, compared with analogous output levels in 2001 (table 1).

In 2002, Albania's gross domestic product (GDP) grew by about 4.7% compared with the 6.0% growth rate in of 2001. This growth rate, albeit diminished in comparison with the rate of growth reached in 2000, continued to be fueled, in large measure, by transfers from abroad (more than 25% of the GDP) in the form of donations, remittances, and some inflow of international capital (U.S. Department of Commerce, 2004, p. 1). In 2002, industry represented about 24% of the GDP; the value of output of the mining and quarrying sector represented about 11%. Industrial production increased by about 8%; the mining and quarrying sector grew by only 1% (World Bank Group, 2003).

The level of foreign investment in Albania's minerals sector had not changed appreciably since 2000. The ferrochromium plant at Elbasan was under the operational management of Italian ferrochromium producer Darfo S.p.A. Plans to put the Burrel ferrochromium plant into full operation in 2002, however, did not materialize. The Turkish copper smelting concern, Ber-Ober Madencilik San ve Tic As, which was granted a 30-year concession to operate Albania's copper industry in 2000 (mines and processing facilities in the Lezhe, the Midrite, and the Puke districts), continued its work, although copper production during the year was not reported. Ber Oner's work included the reconstruction of the Munelle copper mine and similar plans to modernize the Fushe Arrez copper beneficiation plant (Kocibelli, 2003).

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## BOSNIA AND HERZEGOVINA

Bosnia and Herzegovina is endowed with valuable mineral resources that include bauxite, coal, industrial minerals, iron ore, and lead and zinc. These resources and their mining and processing facilities, however, were exploited in two politically distinct regions with distinct administrative structures within a formal national government organization. The two constituent regions, the Federation of Bosnian Moslems and Croats (FBC) and the Republika Sprska (RS) accounted for about 51% and 49% of Bosnia and Herzegovina's territory, respectively. This type of political and territorial organization was an outcome of a series of compromises that led to peace accords between factions involved in civil war in the 1990s.

Despite disparate systems for reporting data by the entities to the Central Government authorities in Sarajevo, a greater degree of published information was available in 2002 than had been in previous years. According to the latest available official data, the country's gross domestic product (GDP) in 2001 amounted to about \$4.8 billion, which was an increase of approximately 5.7% compared with that of 2000. The FBC's share of Bosnia and Herzegovina's GDP amounted to about \$3.33 billion, or 69% of the total GDP; this showed growth of about 4.9% compared with that of 2000. The GDP of the RS amounted to \$1.37 billion, which was an increase of about 6.1% compared with that of 2000. Although foreign financial assistance and transfers from abroad continued to be of economic significance, foreign capital flows appeared to have increased with positive economic impact and were discernible in the country's minerals sector (Agency for Statistics of Bosnia and Herzegovina, 2003, p. 23).

In 2002, the value of the FBC's mining output represented about 12.19% of the value of the entity's total industrial production. The FBC's exploitable mineral resources included coal, bauxite, gypsum, lead and zinc, magnesite, and rock salt. The FBC also operated the country's only aluminum and steel plants. The major issues and events in the FBC's minerals sector during the year concerned the reemergence of these facilities. The \$70 million investment program to reconstruct and refurbish Aluminijum D.D. Mostar (Mostar), which was the country's sole aluminum producer, was completed in 2002. New equipment and facilities at Mostar included modernized potlines (converted to center-worked feed cells), a more-efficient alumina-dosing installation, and a fume-scrubbing system. These improvements and the addition of greater electric current potential to the pots were expected to increase Mostar's production capacity by 16,000 metric tons per year (t/yr) to 114,000 t/yr of aluminum (MBM, 2002, p. 26, 27). In 2002, Mostar's aluminum production reached a record level of 103,140 metric tons (t), which was almost 9% greater than that achieved in 2001; production in 2003 was planned to reach 107,000 t. Additional planned investments included upgrading the company's casthouse and slab casting operations in 2003.

Bauxite production amounted to about 123,600 t, which was an increase of about 61%, compared with that of 2001 (World Bureau of Metal Statistics, 2003, p. 6). The reconstruction of Mostar's alumina refinery, which was badly damaged during the war, was, however, put into abeyance. Greater economy was achieved by importing alumina (from Glencore International AG) than would have been achieved through reestablishing a domestic refining capacity. The issue of Mostar's ownership remained unsettled during the year. The FBC's Central Government apparently disputed the legitimacy of Mostar's privatization during the period of civil conflict in the 1990s. An arbitration commission under World Bank auspices was to oversee the resolution of the issue (Sito-Sucic, 2003).

BH-Steel-Zeljezara Ltd. (B-H Steel), which was located in the FBC, was Bosnia and Herzegovina's other major metallurgical facility. In 2002, B-H Steel continued to be a joint venture with the Kuwait Consulting & Investment Co. (50% equity); the joint venture was instituted with assistance from Bosnian and Kuwaiti Government bodies. The crude steelmaking capacity at B-H Steel was rated at about 1.4 million metric tons per year (Mt/yr) (Cooke, 2001, p. 38). Crude steel production, however, amounted to only 84,000 t in 2002, which was representative of a mainly increasing production trend. This trend, which started with the resumption of production in 1996 when about 54,000 t was produced, was interrupted from 1993 to 1995, which was essentially the period of the country's civil war. Of total steel production in 2000 and 2001, about 31% and 30% was produced in an electric arc furnace (EAF); the open-hearth process produced the balance. In 1992, the last prewar production of crude steel by B-H Steel amounted to 261,000 t, of which about 164,000 t was continuously cast. This process, however, does not appear to have been restored in 1996 (International Iron and Steel Institute, 2002). Plans were drawn in 2002 to install a new 100-t EAF; a ladle furnace and billet caster also were included in the upgrading program for the steel mill.

In the FBC, investment in the cement industry continued to be of major importance. In 2002, D.D. Fabrika cementa Lukavac, which became fully privatized through the sale of Government assets in 2001, was approved by the International Finance Corporation (IFC) for loans whose total value amounted to about \$22.6 million. The IFC loans were used to modernize Lukavac's 340,000-t/yr cement production capacity, thereby allowing the facility to become competitive and to contribute to the country's reconstruction programs. Local quarries were to provide the necessary feedstock to the plant (International Finance Corporation, 2002). Modernization plans also were initiated at the Kakanj Cement Plant, which was a subsidiary of the Heidelbergcement Group of Germany. The first stage of investment, which was completed in midyear, was valued at about \$10.4 million, of which about \$7.68 million was earmarked for pollution control technology. A second investment stage was initiated during the year; about \$43.1 million

was earmarked for a coal-processing facility, the study of alternative fuels usage, and the startup of a quarrying operation (Orah Group, 2002b§<sup>1</sup>).

In early 2002, the Banovici Mining Enterprise, which was a major coal producer and operated three surface mines and one underground brown coal mine in the FBC's Tuzla region, anticipated that coal production would reach 1.3 million metric tons (Mt); of that total, 800,000 t was earmarked for thermal electric power generation in Tuzla, and about 300,000 t, for other domestic consumers, and customers in Serbia and Montenegro (Orah Group, 2002a§). Other issues that concerned the energy sector included agreements that were concluded between the Governments of Bosnia and Herzegovina and Croatia to permit petroleum and derivatives shipments from Croatia at designated border shipment areas. Earlier attempts to agree on border shipment ports for petroleum and refinery products were unsuccessful despite Bosnia and Herzegovina's total dependence on imports of hydrocarbon fuels. Also, Petropars Ltd. of Iran reported plans to invest in an exploration program for petroleum and natural gas in Bosnia and Herzegovina (Pravda, 2002).

The total value of industrial output in the RS declined by 2% compared with that of 2001. The output of coal, lignite, and peat production declined by 11%. In 2002, the RS's production of brown coal amounted to more than 1.2 Mt, which was about 2% less than that produced in 2001; the output of lignite, which amounted to about 1.42 Mt, represented a decline of about a 26%. The gross value output of petroleum refinery products and coke registered an increase of 7% compared with that of 2001 and an increase in physical terms of about 16% (Republika Srpska Institute of Statistics, 2002, p. 11, 13).

The value of the RS's mine production of metals declined by 24% compared with that of 2001, and that of base metals production declined by 37%. In physical units, however, the aggregated production of steel semimanufactures rose by almost 11%. Secondary recovery of lead, iron and steel, and aluminum, declined by 30%, 11%, and 8%, respectively. The production secondary copper increased by 3.3% compared with that of 2001. Quantitatively, these percentages represent minor output levels of less than 1,000 t (Republika Srpska Institute of Statistics, 2002, p. 11, 13, 23). The RS was known to mine bauxite and iron and lead and zinc ores.

In terms of value, the RS's production of mineral fuels registered a decline of about 11% for the output of coal, lignite, and peat and an increase of about 7% coke and refined petroleum production. In 2002, the output levels of lignite and brown coal amounted to about 1.4 Mt and more than 1.2 Mt, respectively, which were declines of about 26% and 2%, respectively, compared with those of 2001. The RS's physical output of petroleum refinery products rose by about 16% albeit from a low output level (Republika Srpska Institute of Statistics, 2002, p. 11, 13). A signal event in the RS's mineral fuels sector was an agreement reached in midyear between the RS Government and an international consortium, which comprised Bosnian Serb, Russian, and Swiss financial interests, to build a 456-kilometer pipeline. The pipeline project, which was valued \$110 million, was designed to transport Russian natural gas via Serbia and Montenegro to the RS through Zvornik and then to the rest of Bosnia and Herzegovina. The pipeline was to be completed in 2005 (Reuters, 2002).

Industrial mineral production in the RS included asbestos, ceramic and refractory clays, gypsum, limestone, magnesite, marble, and silica. In 2002, the value of mine and quarry production of industrial mineral declined by about 11% compared with that of 2001. The physical output levels of mine and quarry products, however, mostly showed increases of production compared with those of 2001. Increases were reported for gypsum, crude dolomite, limestone (gravel, crushed stone, and blocks), and lime. Only the production of ceramic clays and gravel from all sources declined (Republika Srpska Institute of Statistics, 2002, p. 11, 13, 17).

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## CROATIA

Petroleum extraction and refining sectors continued to play leading roles in Croatia's mineral industries. The mining and processing of industrial minerals and metals occupied a much lesser role in meeting the country's consumption needs.

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<sup>1</sup> References that include a section mark (§) are included in the Internet Reference(s) Cited sections.

In 2002, Croatia's gross domestic product increased by 3.8% compared with that of 2001; total industrial production rose by 4.5%. The value of output of the mining and quarrying sector, as a whole, rose by about 17% compared with that of 2001; this represented about 5.3% of the gross value output of industry (Bruckbauer and others, 2002, p. 23).

The petroleum and natural gas sector (less surveying) increased output by 1.4% compared with the 3% shortfall in 2001. Recovering from a decline in 2001 of about 5%, the gross value of output of coke and petroleum refinery products increased by about 1.2% in 2002 (CROSTAT, 2003). The value of output of the natural gas and petroleum sector as a portion of total industrial output amounted to about 3.8%. The Government continued to promote reform and privatization of the country's energy sector. In the early part of the year, the Government approved initial privatization stages for HEP, which was the public electric-power-generating company, and INA, which was the national oil and gas company. Legislation that concerned INA stipulated that the Government retain 25% of the company's shares, at least until accession by the country to the European Union; 25% plus one share was to be sold to a major strategic investor; the balance of INA's shares was to be sold on the stock market and distributed to current and former employees and war veterans under preferential terms (Alexander's Gas & Oil Connections, 2002). Foreign oil and gas concerns that expressed initial interest in offering bids during INA's privatization included those of Austria, Hungary, Poland, and Russia.

INA's commercial activities during the year included exploration for natural gas and petroleum in Albania and Syria. In the southwestern part of Albania, INA was developing an oil well at Dajlani 1 during the first phase of planned exploration. In Syria, INA began the development of the Jihar 1 well in the Hayan exploration block; the development of a second oil well also was initiated. Three wells were to be put into operation during INA's first phase of exploration and development work in Syria (Orah Group, 2002b§). Exploration work in Croatia's offshore areas that previously were undertaken jointly by INA and Italy's national oil and gas company Ente Nazionale Idrocarburi (ENI) resulted in the discovery of about 20 billion cubic meters of natural gas in the Annamaria, the Ida, the Ika, the Ivana, and the Marica fields. The development plan calls for the construction of 9 production platforms to work 18 drill sites and the laying of a 120-kilometer underwater gas main. Production was anticipated to begin in 2004 (Orah Group, 2002a§).

The gross value of output of the country's mining and quarrying operations, other than those associated with hydrocarbons, increased by about 56%, and that of processed industrial minerals, by 14% compared with those of 2001 (CROSTAT, 2003).

The decline in the value of base-metals output amounted to about 10%. Preliminary data for 2002 indicated that production of aluminum ingot (primary and secondary) ceased; more than 16,000 metric tons had been produced in 2001. The decline in output of aluminum alloys and aluminum semimanufactures amounted to about 1.3% and 1.0%, respectively. In addition, the production of crude steel fell by about 42% compared with that of 2001 (Croatian Chamber of the Economy, 2002a, p. 2; World Bureau of Metal Statistics, 2003).

The privatization of Zeljezara Sisak in 2001 resulted in its acquisition by the Austrian-Russian consortium Trubo Impex. In 2002, Zeljezara Sisak experienced a reversal following a wage dispute between labor and the company's new management. In November, Trubo Impex withdrew from its participation in Sisak's operation, which left the company in financial difficulty (Reuters, 2003).

The output of most industrial minerals continued to register growth. Preliminary production data for 2002 show increases for salt, crushed stone, silica materials, dimension stone, and gypsum of 19%, 14%, 9%, 8%, and 3%, respectively, compared with output levels of 2001. In 2002, industrial minerals mining and processing and building materials sectors constituted 7% of the value of total industrial production. The production of lime, glass, and cement increased by about 6%, 6%, and 4%, respectively, compared with that of 2001. About 20% of the mining and quarrying of industrial minerals had been going directly for the production of consumer goods; the balance was used as feedstock for a wide range industrial products (Croatian Chamber of the Economy, 2003b, p. 2).

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## MACEDONIA

In 2002, the economy of the Former Yugoslav Republic of Macedonia (Macedonia) showed recovery as preliminary calculation of the gross domestic product (GDP) by the Government registered an increase of about 0.3% compared with that of 2001. In 2001, the country's economy declined owing to unresolved ethnic conflicts and social tensions.

The value of mining and quarrying as a percentage of the GDP (0.5%) in 2002 declined by about 7% compared with that of 2001 (National Bank of Macedonia, 2003). Direct investment in the mining and quarrying sector in 2002 totaled only \$288,149, although in 2001, direct investment in this sector amounted to almost \$2.1 million.

Macedonia was well-endowed with nonferrous metals and had the mining capacities to produce about 2.5 million metric tons (Mt) of lead-zinc ore and 4 Mt of copper ore. Processing capacities were designed to produce about 150,000 metric tons per year (t/yr) of lead and zinc concentrates and 50,000 t/yr of copper concentrates. Smelting and refining facilities allowed a potential output of about 67,000 t/yr of zinc and 33,000 t/yr of lead. Also, such associated metals as cadmium, gold, and silver were produced (Economic Chamber of Macedonia, 2002). In 2002, the nonferrous metals mining and processing sector remained operating at low levels of utilization owing largely to social tension within the country and political instability in the region. Production increases in 2002 were reported for cadmium and nickel, albeit from a low output baseline. Production declines, however, were noted for mined copper, lead, and zinc, and refined zinc. Macedonia's exports of nonferrous metals amounted to about \$61.8 million, or about 6% of the value of total exports in 2002; the overall value of exported nonferrous metals declined by 16% compared with that of 2001. Imports of nonferrous metals, however, increased by about 47% compared with those of 2001 (National Bank of Macedonia, 2003).

Major activities in the nonferrous metals sector included the overhaul of the environmental equipment at MHK DOO-Skopje (MHK) (formerly MHK Zletovo), which was Macedonia's major lead and zinc smelting and refining enterprise. MHK's smelter and refinery were acquired by the Filo Business and Asset Group of Panama in 2001, and the enterprise was scheduled for temporary closure while undergoing technical environmental upgrading (MBM, 2002). About two thirds of MHK feedstock of lead and zinc ores and concentrates came from imports. Of the three domestic ore and concentrate producers, the Sasa-Makedonska Kamenica (Sasa) Mine, which was open to bidding by Macedonia's Privatization Agency in the early part of the year, had the capacity to produce about 65,000 t/yr of mixed lead-zinc concentrates (Orah Group, 2002§). Bids for the Sasa Mine and the smaller Toranica Mine came from mining interests in Greece, Turkey, and the United Kingdom.

Macedonia's production of steel semimanufactures amounted to about 55,000 t, which was at about the same level as that of 2001. Macedonia's exports of iron and steel, in terms of value, declined by 21% compared with those of 2001. Imports increased by about 27% (National Bank of Macedonia, 2003). Crude steel was produced at Makstil A.D. Skopje (a subsidiary of the Duferco Group); an electric furnace with a rated capacity of about 260,000 t/yr and continuous casting technology, which was upgraded in 2001, were used. A heavy plate hot-rolling mill at Makstil had a 600,000-t/yr production capacity. In 2002, production at the plate mill amounted to about 260,000 metric tons (t) compared with about 290,000 t in 2001. Other ferrous metals production included mined nickel and ferronickel plant production by Feni Industries (formerly Fenimak), which was purchased by Sté Commerciale de Metaux et Minerais of France in 2000. With production of ferronickel planned to reach full capacity of about 6,000 t in 2002, Feni reached an agreement with the Thyssen Krupp Group of Germany in 2001 in which Feni would provide its total annual ferronickel production to Thyssen Krupp for 5 years; the deal was valued at \$40 million per year (MBM, 2002). No decision was reached regarding the activation of Feni's idled second production line. Jugohrom Jegunovce, which was the country's producer of ferrochromium and ferrosilicon, ceased production at yearend 2001. In 2002, the Government of Macedonia offered Jugohrom's assets for sale, and bids were to be reviewed by a receivers' committee.

Macedonia continued to produce bentonite, cement, feldspar, gypsum, sand and gravel, stone (carbonate and silicate), and other construction materials mainly for export. Like most other industrial sectors, the industrial minerals sector had undergone major production and sales difficulties owing to the loss of traditional markets and political uncertainty in the region. In 2002, AD Silika Alumosilikat in Gostivar, which was the country's major producer of alumina- and silica-based refractories, continued to seek foreign investors to restart operations, which had been suspended during the previous year.

Macedonia's minerals fuels sector was centered on lignite production and petroleum refining. Lignite output was estimated to be about 6 Mt in 2002. Imports of coal, coal briquettes, and coke in 2002 were valued at about \$12.5 million, which was a decline of about 10% compared with those of the preceding year. The petroleum refining industry saw a decline of exports and imports of about 42% and 5%, respectively. The operational startup of the Thessaloniki-Skopje crude petroleum pipeline, which gained financial backing from the European Bank for Reconstruction and Development in 2000, was initiated in midyear. The pipeline, which extended 214 kilometers from Thessaloniki in Greece to Macedonia's capital, Skopje, was designed to carry about 2.5 million metric tons per year of crude petroleum. The pipeline's cost was about \$110 million (Alexander's Oil & Gas Connection, 2002).

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## SERBIA AND MONTENEGRO

In 2002, Serbia and Montenegro's economy continued to show overall recovery. The gross domestic product (GDP) officially was reported to have risen by 4.0% compared with that of the preceding year. Industrial production increased by 1.7%, buoyed largely by production increases of 2.7% and 2.2% in the manufacturing and mining and quarrying sectors, respectively (Federal Statistical Office, 2003a, p. 1, 2).

The nonenergy-related mining and quarrying industries achieved, in aggregate, a 7% greater level of production than that of 2001; the output of metal ores and industrial minerals rose by 8% and 6%, respectively. The output of metals increased by 6% compared with that of 2001 (Federal Statistical Office, 2003a, p. 13). In 2002, the output of silver, aluminum, and primary refined copper increased by 19%, 11.5%, and 11% compared with their respective production levels in 2001. The declining production of lead-zinc ore and lead and zinc metals, however, continued to be weighted down mainly by the uncertain status of the Trepca lead-zinc mining and processing operation in the Serbian Province of Kosovo, which remained a United Nations protectorate. Major activities in the aluminum industry in 2002 included plans to upgrade surface bauxite mining operations in Montenegro that eventually could raise total production capacity to 900,000 metric tons per year (t/yr) from about 630,000 t/yr in 2002 (table 10; MBM, 2002 p. 28). Montenegro's reserves of bauxite were estimated to be about 400 million metric tons (Mt), which could allow the expansion of alumina refining not only in Serbia and Montenegro, but in the other republics of the former Yugoslavia. The reopening of the Birac alumina refinery in the Republica Srpska of Bosnia and Herzegovina was under discussion during the year (Norton, 2003, p. 2). In addition, Serbia's agency for privatization announced plans to sell off 70% of the stock in each of two aluminum rolling and fabricating plants, Valjaonica Aluminiujuma Sevoina (Sevoina) in Seval and Nissal in Nis (MBM, 2002, p. 28). A production increase of 65% to about 50,000 metric tons (t) of rolled aluminium, was planned at the Sevoina aluminum rolling mill in 2002 (Orah Group, 2002§). In 2002, Serbia and Montenegro's exports of aluminum amounted to 113,182 t, which was an increase of about 23% compared with those of 2001 (Federal Statistical Office, 2003b, p. 32).

Rudarsko-Tapioncarski Basen Bor (RTB Bor) in Bor was Serbia and Montenegro's center for mining, smelting, and refining copper. In 2002, the output of copper ore grew by about 12% compared with that of 2001. In addition to domestic mine production of copper, Serbia and Montenegro also imported 37,000 t of copper concentrates and ores for processing at the RTB Bor facilities; in 2001, copper ore and concentrate imports amounted to about 50,000 t. Exports of copper metal (anode and cathode) in 2001 and 2002 amounted to 55,000 t and 44,000 t, respectively. Exports of copper semimanufactures in 2001 and 2002 amounted to 18,811 t and 18,761 t, respectively (Federal Statistical Office, 2003b, p. 40). With a total copper refining capacity of about 180,000 t/yr, RTB Bor also toll smelted concentrates for Mytilineos SA of Greece as part of a broad 7-year agreement reached 1998. In 2002, RTB Bor management concluded an agreement with Debis AG of Germany that would increase tolling throughput by about 100,000 t/yr of concentrate during the year as part of a broader investment and modernization proposal (MBM, 2002; Orah Group, 2002§).

In 2002, lead and zinc ore production declined by more than 38% compared with that of 2001. Official data for 2001 and 2002 indicate a hiatus of lead refining and a substantial decline in the production of zinc (11% in 2002). The production of magnesium metal, however, appeared to have stabilized; magnesium exports for 2001 and 2002 amounted to 1,630 t and 1,695 t, respectively.

The iron and steel sector continued to operate at about one-third of total steelmaking capacity. The output of pig iron and crude steel remained at approximately the production levels of 2001. Exports of nonalloyed flat-rolled steel, however, saw a marked increase that amounted to 649,000 t compared with 294,000 t exported in 2001. Imports of iron ore and concentrates during the same period amounted to 253,000 t compared with 79,000 t imported in 2001 (Federal Statistical Office, 2003b, p. 32, 33). One of the salient events in the iron and steel industry during the year was an agreement between Sartid Smederevo a.d., which was the country's major steel producer, and U.S. Steel Kosice s.r.o. (USSK) (a subsidiary of the USX Corporation of the United States in Slovakia) to develop a strategic partnership. This partnership would allow Sartid to utilize its full steelmaking capacity, modernize its operations, and possibly lead to USSK's majority ownership of Sartid's stock (ETEBA S.A., 2002; Reuters, 2002).

With the exception of salt and quartz sand, which recorded marked declines in 2002 of 31% and 14%, respectively, the production of industrial minerals generally remained within the range of output levels of the preceding year. Major activities within the industrial minerals sector included the acquisition of a majority of stock in the Novi Popovac cement plant by Holcim Ltd. of Switzerland; the cost was reported to be at about \$52.5 million (Holcim Ltd., 2002).

In 2002, the production of petroleum and natural gas continued to decline—about 9% and 4%, respectively, compared with output levels reached in 2001. The total output of coal remained at the 33.4-Mt-level of 2001. Imports of petroleum, natural gas, and semicoke amounted to about 2.7 Mt, 1.0 Mt, and 106,000 t, respectively, which represented increases of about 46%, 20%, and 83%, respectively, compared with those of 2001 (Federal Statistical Office, 2003b, p. 32, 33). The privatization of the of the country's natural gas and petroleum extraction and refining sectors remained on the Government's agenda in 2002 as plans were developed to put their transition to private ownership during into effect in 2003 and 2004.

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## **SLOVENIA**

Slovenia continued to record economic growth in 2002. According to the Bank of Slovenia, the gross domestic product grew by about 3.1% in 2002 compared with that of 2001. The value of industrial production rose by year by 5.4 % compared with that of 2001; of that, the mining sector registered a 7.7% increase (Banka Slovenije, 2003). Slovenia's minerals output consisted of modest quantities of coal, natural gas, petroleum, and a variety of industrial minerals. The country relied heavily on imports of minerals to meet most industry needs. According to the latest available data for 2001, imports of such mined products as coal and peat, natural gas and petroleum, metal ores, and industrial minerals, exceeded exports, in terms of value, by substantial margins. Similarly, imports of basic metals, industrial minerals, and hydrocarbon derivatives substantially exceeded their exports (Statistical Office of the Republic of Slovenia, 2003, p. 392, 397).

Slovenia's metallurgical sector mainly comprised primary aluminum production at Kidricevo (Talum d.o.o.) and three steel mills [Slovenske Zelezarne (SZ)], which was a state-owned holding company that maintained ownership of SZ Acroni Jesenice d.o.o. (Acroni) and SZ Metal Ravne d.o.o. (Metal Ravne); Inexa Štore d.o.o. (formerly Jekla Štore) has been a subsidiary of the Inexa Group of Sweden since 1999. In 2002, Slovenia's total output of crude steel rose by about 4% compared with that of 2001. Generally, steel production remained well below capacity mainly because of the dissolution of the former Yugoslav market and weak global and regional demands for steel.

The major events in the steel industry included an initial approval by the Government for the sale of Metal Ravne to Petrol, which was a Slovenian oil trader. The transaction called for the purchase of 80% of shares stock of Metal Ravne for about 2.8 million euros (€) and an investment of about €1.6 million in the steel mill. The final decision on Petrol's acquisition of Metal Ravne was expected to be made in mid-2003. In 2002, Acroni produced 239,061 t of steel, which comprised about 47% cold-rolled strips and sheets, 35% quarto plates and 18% hot-rolled strips and sheets (Orah Group, 2002§). Acroni concluded a loan agreement worth about €1.5 million to modernize the steel mill's operations and to increase the output of stainless and special steels. FATA Group Inc. (a U.S. subsidiary of FATA Group S.p.A. of Italy) was to upgrade of Acroni's continuous decarburization and coating line for nonoriented cold-rolled silicon steel. Additionally, Inexa Štore reported steel production in 2002 to have amounted to 100,400 t, which was a 5% increase compared with the production level in 2001. Exports reportedly amounted to 45,738 t, which represented about 52% of total sales in 2002 (Inexa Štore Informator, 2003).

The industrial minerals sector continued to undergo privatization. In early 2002, French cement producer Lafarge acquired a controlling interest in Slovenia's Cementarna Trbovlje cement plant. Trbovlje was the country's major cement producer with clinker production capacities rated at 322,000 metric tons per year (t/yr) and a cement grinding capacity of 777,000 t/yr (Orah Group, 2002§).

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TABLE 1  
ALBANIA: PRODUCTION OF MINERAL COMMODITIES<sup>1</sup>

(Metric tons unless otherwise specified)

Commodity <sup>2</sup>	1998	1999	2,000	2001	2002
<b>METALS</b>					
Bauxite	4,128	4,624	5,000	5,000	5000
Chromium:					
Chromite, gross weight <sup>e</sup>	150,285	79,445	280,000 <sup>r</sup>	200,000 <sup>r</sup>	215,000
Marketable ore(41.6% Cr <sub>2</sub> O <sub>3</sub> )	81,994	64,597	117,000 <sup>r</sup>	86,000 <sup>s</sup>	82,000 <sup>s</sup>
Concentrate	20,195	6,837	3,400 <sup>r</sup>	-- <sup>s</sup>	9,000 <sup>s</sup>
Total marketable ore and concentrate	102,189	71,434	120,400 <sup>r</sup>	86,000	91,000
Ferrochromium	30,252	28,120	12,500	11,900	22,100 <sup>s</sup>
Copper:					
Ore:					
Gross weight	53,477	33,945	-- <sup>r</sup>	--	-- <sup>s</sup>
Concentrate	2,294	8,691	-- <sup>r</sup>	--	-- <sup>s</sup>
Cu content <sup>e</sup>	3,200	900	-- <sup>r</sup>	--	-- <sup>s</sup>
Metal, primary:					
Smelter (blister)	1,632	1,281	-- <sup>r</sup>	--	-- <sup>s</sup>
Refined, electrolytically	1,150	342	-- <sup>r</sup>	--	-- <sup>s</sup>
Iron and steel :					
Pig iron <sup>e</sup>	10,000	10,000	-- <sup>r</sup>	--	
Crude steel <sup>e</sup>	19,527 <sup>r</sup>	15,600 <sup>r</sup>	64,700 <sup>r</sup>	94,100 <sup>s</sup>	96,600 <sup>s</sup>
Rolled steel	42,000	8,700	-- <sup>r</sup>	--	--
<b>INDUSTRIAL MINERALS</b>					
Cement, hydraulic thousand tons	84 <sup>r</sup>	106 <sup>r</sup>	180 <sup>r</sup>	--	--
Clay, kaolin <sup>e</sup>	500	422 <sup>r</sup>	420 <sup>r</sup>	385	350 <sup>s</sup>
Dolomite <sup>e</sup>	50,000	50,000	50,000	50,000	50,000
Fertilizer, manufactured, phosphatic	12,284	8,600	-- <sup>r</sup>	--	--
Nitrogen, N content of ammonia <sup>e</sup>	10,000	10,000	-- <sup>r</sup>	--	--
Olivinite <sup>e</sup>	300	300	200	200	200
Phosphate rock (12% - 15% P <sub>2</sub> O <sub>5</sub> ) <sup>e</sup>	1,000	1,000	--	--	--
Salt <sup>e</sup>	10,000	10,000	--	--	--
Sulfuric acid <sup>e</sup>	500	500	500	500	500
<b>MINERAL FUELS AND RELATED MATERIALS</b>					
Asphalt and bitumen, natural <sup>3</sup>	15,782	16,625	16,000 <sup>r</sup>	-- <sup>r</sup>	4,200 <sup>s</sup>
Petroleum coke	57,842	47,543	46,000 <sup>r</sup>	45,000	40,000
Coal, lignite thousand tons	49,000 <sup>r</sup>	28,000 <sup>r</sup>	20,600 <sup>r</sup>	16,400	20,300
Gas, natural, gross production <sup>4</sup> thousand cubic meters	16,551	14,167	11,490	10,980	9,150 <sup>s</sup>
Petroleum, crude gross weight	364,627	323,009	314,000	308,000	275,000 <sup>s</sup>

<sup>e</sup> Estimated. <sup>r</sup> Revised.

<sup>1</sup>Table includes data available through August 2003.

<sup>2</sup>In addition to the commodities listed, a variety of industrial minerals and construction materials (common clay, quartz, titanomagnetite, stone, and sand and gravel) are produced, but output is not reported quantitatively, and available information is inadequate to make reliable estimates of output levels.

<sup>3</sup>Includes asphalt and bitumen produced at petroleum refineries.

<sup>4</sup>Separate data on marketable production are not available, but gross and marketed output are regarded as being nearly equal.

<sup>5</sup>Reported figure.



TABLE 2  
ALBANIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2002<sup>1</sup>

(Thousand metric tons unless otherwise specified)

Commodity	Location of main facilities (all state-owned)	Annual capacity
Cement	Elbasan, 32 kilometers southeast of Tirana; Kruje, 20 kilometers northwest of Tirana; Shkoder, 85 kilometers northwest of Tirana; and Vlore, southwest of Tirana	1,200
Chromite	Bater (including Bater I and II and Martanesh), 40 kilometers northwest of Tirana	450
Do.	Bulquize (including Bulquize south, Fush, Terrnove, and Todo Maco), 35 kilometers northwest of Tirana	450
Do.	Kalimash, 60 kilometers north of Tirana	250
Do.	Kam, 70 kilometers north of Tirana	100
Do.	Klos, 20 kilometers northeast of Tirana	50
Do.	Pogradec (including Katjtel, Memelisht, Pojske, Pishkash, and Pprenjas), 50 kilometers east of Tirana	100
Ferrochromium	Burrel, 35 kilometers northeast of Tirana	40
Do.	Elbasan, 32 kilometers southeast of Tirana	36
<b>Copper:</b>		
Ore	Fushe-Arrez, 80 kilometers north of Tirana	350
Do.	Gjejan, 100 kilometers northeast of Tirana	150
Do.	Golaj (including Nikoliq and Pus), 120 kilometers northeast of Tirana	150
Do.	Kurbnesh-Perlat, 55 kilometers northeast of Tirana	100
Do.	Rehove, 110 kilometers southeast of Tirana	100
Do.	Reps (including Gurch, Lajo, Spac, and Thurr), 55 kilometers north of Tirana	350
Do.	Rreshen, 50 kilometers north of Tirana	50
Do.	Shkoder (including Palaj, Karma I and II), 85 kilometers northwest of Tirana	100
Smelter	Kukes, 110 kilometers northeast of Tirana	6
Do.	Lac, 35 kilometers northwest of Tirana	7
Do.	Rubik, 50 kilometers north of Tirana	4
Iron ore	Pprenjas (Bushtrica, Pprenjas, Skorska I and II), 70 kilometers southeast of Tirana	650
Do.	Guri i Kuq (including Cervenake, Grasishta, Guri i Kuq, Hudenisht and Guri Pergjrgjur), 25 kilometers east of Tirana	500
Steel	Steel of the Party Metallurgical Combine at Elbasan	150
Nickel, smelter	Elbasan	6
Coal, lignite	Maneze, Mezes, and Valias Mines in Tirana Durres area; Krabe Mine, 20 kilometers southeast of Tirana; Alarup and Cervnake Mines, in Pogradec area, 80 kilometers southeast of Tirana; Mborje-Drenove Mine in Korce area, 85 kilometers southwest of Tirana; and Memaliaj Mine in Tepelene area, 110 kilometers south of Tirana	2,500
Natural gas	million cubic feet Gasfields on southwest Albania between Ballsh and Fier	16,000
<b>Petroleum:</b>		
Crude	42-gallon barrels per day Oilfields at Marineze, Ballsh, Shqisht, Patos, Kucova, Gorrish, and others	35,000
Refined	do. Refineries: Ballsh, Cerrik, Fier, and Stalin	33,000

<sup>1</sup>A substantial portion of these enterprises have been operating significantly below capacity during the transition to a market economy; the capacities provided in this table only represent the latest available information and may not show the true status of these enterprises.

TABLE 3  
BOSNIA AND HERZEGOVINA: ESTIMATED PRODUCTION OF MINERAL COMMODITIES<sup>1</sup>

(Metric tons unless otherwise specified)

Commodity <sup>2</sup>	1998	1999	2000	2001	2002
METALS					
Aluminum:					
Bauxite	30,000 <sup>r</sup>	30,000	20,700 <sup>r</sup>	77,000 <sup>r</sup>	123,000 <sup>3</sup>
Metal, ingot; primary and secondary	38,000	70,000	94,500	96,000 <sup>r</sup>	103,000 <sup>3</sup>
Iron and steel:					
Ore and concentrate:					
Gross weight	100,000	100,000	360,000 <sup>r</sup>	220,000 <sup>r</sup>	130,000
Fe content	53,000 <sup>r</sup>	53,000 <sup>r</sup>	191,000 <sup>r</sup>	117,000 <sup>r</sup>	70,000
Metal:					
Ferroalloys	10,000 <sup>r</sup>	15,000 <sup>r</sup>	20,000	20,000	20,000
Pig iron	58,000 <sup>r</sup>	45,000 <sup>r</sup>	57,000 <sup>r</sup>	60,000	60,000
Crude steel:	75,000 <sup>r</sup>	60,000 <sup>r</sup>	77,000 <sup>r</sup>	84,000 <sup>r</sup>	70,000 <sup>3</sup>
Electric arc furnace	19,000	20,000	24,000	25,000 <sup>r</sup>	25,000
Open hearth furnace	56,000	40,000	53,000	59,000 <sup>r</sup>	60,000
Semimanufactures	67,000 <sup>r</sup>	75,000 <sup>r</sup>	16,000 <sup>r</sup>	160,000 <sup>r</sup>	150,000
Lead:					
Mineral concentrator output:					
Ore, gross weight (Pb-Zn ore)	10,000	10,000	10,000	10,000	10,000
Pb content of ores	200	200	200	200	200
Pb concentrate	400	400	400	400	400
Metal, smelter, primary and secondary	100	100	100	100	100
Manganese ore:					
Gross weight	2,000	2,000	2,000	2,000	2,000
Mn content	500	500	500	500	500
Zinc:					
Zinc content of Pb-Zn ore	300	300	300	300	300
Concentrate output, gross weight	600	600	600	600	600
INDUSTRIAL MINERALS					
Asbestos, all kinds	500	500	500	500	500
Barite concentrate	2,000	2,000	2,000	2,000	2,500
Cement	thousand tons	300	300	300	500
Clays:					
Bentonite	800	800	800	800	1,000
Ceramic clay, crude	20,000	20,000	20,000	20,000	25,000
Kaolin:					
Crude	3,000	3,000	3,000	3,000	3,000
Calcined	1,500	1,500	1,500	1,500	1,500
Gypsum:					
Crude	30,000	30,000	30,000	30,000	30,000
Calcined	3,000	3,000	3,000	3,000	3,000
Lime	thousand tons	50	50	50	50
Magnesite, crude	2,000	2,000	2,000	2,000	2,000
Nitrogen, N content of ammonia	500	500	500	500	500
Quartz, quartzite, glass sand	50,000	50,000	50,000	50,000	50,000
Salt, all sources	50,000	50,000	50,000	50,000	50,000
Sand and gravel, excluding glass sand	thousand cubic meters	500	500	500	500
Sodium compounds:					
Soda ash	5,000	5,000	5,000	5,000	5,000
Caustic soda	5,000	5,000	5,000	5,000	5,000
Sodium bicarbonate	500	500	500	500	500
Stone (excluding quartz and quartzite), dimension, crude:					
Ornamental	square meters	20,000	20,000	20,000	20,000
Other	cubic meters	2,000	2,000	2,000	2,000
Crushed and brown, n.e.s.	thousand cubic meters	500	500	500	500
Sulfur, byproduct of metallurgy	1	1	1	1	1

See footnotes at end of table

TABLE 3--Continued  
BOSNIA AND HERZEGOVINA: ESTIMATED PRODUCTION OF MINERAL COMMODITIES<sup>1</sup>

(Metric tons unless otherwise specified)

Commodity <sup>2</sup>	1998	1999	2000	2001	2002
MINERAL FUELS AND RELATED MATERIALS					
Brown coal and lignite thousand tons	1,764 <sup>r, 3</sup>	1,800	1,900 <sup>r</sup>	1,900	2,000
Petroleum refinery products thousand 42-gallon barrels	500	500	500	500	500

<sup>1</sup>Table includes data available through August 2003.

<sup>2</sup>In addition to commodities listed, common clay was also produced, but available information was inadequate to make reliable estimates of output.

<sup>3</sup>Reported.

TABLE 4  
BOSNIA AND HERZEGOVINA: STRUCTURE OF THE MINERAL INDUSTRY IN 2002

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies	Location of main facilities	Annual capacity
Alumina		Energoinvest	Plants at Birac-Zvornik	600
Do.		do.	Plant at Mostar	280
Aluminum		Aluminij d.d. Mostar.	Smelter at Mostar	92
Bauxite		Energoinvest	Mines at Vlasenica, Jajce, Bosanska Krupa, Posusje, Listica, Citluk, and other locations.	2,000
Coal:				
Brown		SOUR Titovi Rudnici Uglja, Tuzla	Mines in BiH	12,000
Lignite		do.	do.	7,000
Cement		Tvornica Cementa Kakanj d.d.	Plant at Kakanj	650
Do.		D.D. Fabrica Cementa Lukavac	Plant in Lukavac	340
Ferroalloys		Elktrobosna, Elektrohemijaska i Eletrotermijska Industrija	Plant at Jajce	80
Iron ore		Rudarsko Metalurski Kombinat Zenica	Mines at Vares, Ljubija, and Radovan	5,000
Lead-zinc ore		Energoinvest	Mine and mill at Srebrenica	300
Manganese ore		Mangan-Energoinvest	Mine and concentrator at Buzim	100
Petroleum, refined	thousand barrels per day	Energoinvest: Rafinerija Nafta Bosanski Brod	Refinery at Bosanski Brod	100
Pig iron		B-H Steel-Zeljezara Ltd. (Kuwait Consulting and Investment, 50%; Zeljezara Zenica Ltd., 50%)	Blast furnace at Zenica	2,250
Salt	cubic meters per year	Hemijski Kombinat "Sodaso," Rudnik Soli i Solni Bunari	Rock salt: Mines at Tusanj	120,000
Do.	do.	do.	Production from brine at Tuzla, BiH	2,000,000
Steel, crude		B-H Steel-Zeljezara Ltd. (Kuwait Consulting and Investment, 50%; Zeljezara Zenica Ltd., 50%)	Plant at Zenica	2,060

TABLE 5  
CROATIA: PRODUCTION OF MINERAL COMMODITIES<sup>1,2</sup>

(Metric tons unless otherwise specified)

Commodity <sup>3</sup>		1998	1999	2000	2001	2002
METALS						
Aluminum:						
Metal, ingot, primary and secondary		16,112	14,461	15,050	16,019	--
Alloys		2,191	843	977	823	812
Semimanufactures, rolled		26,148	29,465	30,161	34,106	33,774
Ferrochromium		11,771	--	15,753	361	--
Steel:						
Crude, from electric furnaces		104,854	77,213	71,021	57,993	33,851
Semimanufactures:						
Bars and wire rod		42,357	46,665	42,388	31,583	2,078
Seamless tubes		56,637	40,719	36,432	35,297	23,435
Welded pipe		63,844	44,873	26,405	39,935	37,509
INDUSTRIAL MINERALS						
Cement	thousand tons	2,294	2,712	2,852	3,246	3,378
Clays:						
Bentonite		7,581	8,441	10,013	10,580	10,000
Ceramic clay <sup>e</sup>		5,022	6,000	6,100	6,000	6,000
Fire clay, crude <sup>e</sup>		3,500	3,000	--	--	--
Gypsum:						
Crude		107,800	137,991	150,765	130,861	135,000
Calcined		1,259	1,236	1,176	1,217	1,200
Lime	thousand tons	216	198	220	253	269
Nitrogen, N content of ammonia	do.	248	306	328	263	270
Pumice and related materials, volcanic tuff	do.	38	55	38	42	40
Quartz, quartzite, glass sand		245,855	211,572	211,705 <sup>r</sup>	252,013 <sup>r</sup>	274,121
Salt, all sources		24,087	18,477	33,668	32,585	36,885
Sand and gravel, excluding glass sand	thousand cubic meters	4,316	3,644	3,480	3,500	3,500
Stone, excluding quartz and quartzite, dimension stone, crude:						
Ornamental	square meters	1,138,728	1,155,281	1,063,901 <sup>r</sup>	1,044,944	1,127,948
Crushed and brown, n.e.s.	thousand tons	11,360	11,871	10,801	12,941	14,736
Other <sup>c</sup>	cubic meters	20,000	20,000	25,000	25,000	25,000
Sulfur, byproduct of petroleum <sup>e</sup>		15,000	15,000	15,000	15,000	7,069 <sup>r</sup>
MINERAL FUELS AND RELATED MATERIALS						
Carbon black		22,165	17,589	20,029	21,180	19,386 <sup>r</sup>
Coal, bituminous	thousand tons	51	15	--	--	--
Natural gas, gross production	million cubic meters	1,570	1,551	1,659 <sup>r</sup>	2,010	2,122
Petroleum, crude:						
As reported	thousand tons	1,389	1,293	1,214	1,121	1,108
Refinery products		5,183,000	5,639,000	5,322,000	5,400,000	4,513,338 <sup>r</sup>

<sup>c</sup>Estimated. <sup>r</sup>Revised. -- Zero.

<sup>1</sup>Table includes data available through May 2003.

<sup>2</sup>Estimated data are rounded to three significant digits.

<sup>3</sup>In addition to commodities listed, common clay also was produced, but available information was inadequate to make reliable estimates of output levels.

<sup>4</sup>Reported figure.

<sup>5</sup>Rounded to two significant digits.

TABLE 6  
CROATIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2002

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies	Location of main facilities	Annual capacity
Alumina		Jadral, Jadranski Aluminijum	Jadral Alumina Plant	150
Aluminum		Boris Kidric Tvornica Laki Metala	Smelter at Sibenik	75
Do.		Top-Tvornica Olovni i Aluminjskih	Semimanufactures producer at Savska	NA
Coal, bituminous		Istarski Ugljenokopi Rasa	Mines at Labin and Potpican	500
Cement		Dalmacija Cement	Sv. Juraj plant at Kastel Sucurac	1,300
Do.		do.	Sv. Kajo plant at Solin	750
Do.		do.	Majdan plant at Solin Majdan	780
Do.		Istra Cement International D.D.	Plant at Pula	70
Do.		Tvornica Cementa Koromacno	Plant at Koromacno	420
Do.		Tvornica Cementa Umag D.D.	Cement plant at Umag	480
Do.		Nasicecement D.D.	Nacise plant at Tajnovac	840
Natural gas	million cubic feet	Industrija Nafted.d. Zagreb (INA)	Main natural gasfields at Bogsic Lug, and Molve	70,000
Petroleum, crude	thousand barrels per day	do.	Oilfields in Croatia and Slovenia (Benicanci, Zutica, Struzec, Ivanic Grad, Lendava, and others locations)	70
Do.	do.	do.	Refineries at Urinj and Rijeka	160
Do.	do.	do.	Refinery at Sisak	150
Pig iron		Metalurski Kombinat Zeljezara Sisak	2 blast furnaces at Sisak	235
Salt	cubic meters	Solana Pag, Solana Ante Festin	Marine salt: Pag Island	13
Steel, crude		SP MK Zeljezare Sisak d.d.	Plant at Sisak	401
Do.		Jadranska Zelejezara Split	Plant at Split	120

NA Not available.

TABLE 7  
MACEDONIA: ESTIMATED PRODUCTION OF MINERAL COMMODITIES<sup>1, 2</sup>

(Metric tons unless otherwise specified)

Commodity <sup>3</sup>	1998	1999	2000	2001	2002
<b>METALS</b>					
Aluminum, metal, ingot, primary and secondary	5,850 <sup>4</sup>	5,000	4,500	4,000	4,000
Cadmium, smelter output kilograms	50	236 <sup>r</sup>	335 <sup>3</sup>	73 <sup>r</sup>	111 <sup>4</sup>
Copper, mine and concentrator output:					
Ore, gross weight thousand tons	2,000	2,000	2,000	1,500	1,200
Concentrate, gross weight	20,000	20,000	5,000	25,000	15,000
Concentrate, Cu content	9,100	9,000	6,000	9,000	5,600
Gold kilograms	700	750 <sup>r</sup>	750	500	500
Iron and steel:					
Iron ore:					
Gross weight	20,000	20,000	20,000	20,000	20,000
Fe content of ore	1,000	1,000	1,000	1,000	1,000
Concentrate	15,000	15,000	15,000	10,000	10,000
Pellets	10,000	10,000	10,000	10,000	10,000
Agglomerate	5,000	5,000	5,000	5,000	5,000
Metal:					
Ferroalloys:					
Ferronickel (38% Ni), gross weight	9,500 <sup>r</sup>	5,000 <sup>4</sup>	--	10,300	17,000 <sup>4</sup>
Ferrosilicon	96,700 <sup>r</sup>	73,000	65,000	60,000	60,000
Silicon	1,000	--	--	--	--
Total	107,200 <sup>r, 4</sup>	78,000	65,000	60,000	77,000
Steel, crude	45,000	45,000	161,000	260,000	260,000 <sup>4</sup>
Semimanufactures	2,512,081 <sup>r</sup>	159,643	244,044	200,000	200,000
Lead:					
Mine output:					
Ore gross weight (Pb-Zn ore)	867,182 <sup>r, 4</sup>	670,000	850,000	600,000	200,000
Concentrate, Pb content	26,000	26,000 <sup>4</sup>	24,000 <sup>r</sup>	20,000 <sup>r</sup>	15,000 <sup>4</sup>
Primary and secondary:					
Smelter	20,000	20,000	20,000	8,000	3,500
Refined	28,415 <sup>r, 4</sup>	19,738 <sup>r, 4</sup>	22,900	19,700 <sup>r</sup>	19,800 <sup>4</sup>
Nickel, metal, Ni content of FeNi	5,800 <sup>r</sup>	1,900 <sup>4</sup>	--	3,100 <sup>r</sup>	5,100 <sup>4</sup>
Silver kilograms	20,000	22,000 <sup>r</sup>	20,000	15,000	12,000
Zinc:					
Concentrate, Zn content	15,000 <sup>r, 4</sup>	21,000 <sup>r</sup>	25,000 <sup>r</sup>	20,000 <sup>r</sup>	10,000 <sup>4</sup>
Metal, refined, primary and secondary	57,162 <sup>r, 4</sup>	49,608 <sup>r, 4</sup>	62,800	52,000 <sup>r</sup>	38,000 <sup>4</sup>
<b>INDUSTRIAL MINERALS</b>					
Cement thousand tons	461 <sup>r, 4</sup>	520 <sup>4</sup>	585	450	450
Clays, bentonite	30,000	30,000	30,000	25,000	25,000
Diatomite	5,000	5,000	5,000	5,000	5,000
Feldspar	8,137 <sup>r, 4</sup>	11,275 <sup>r</sup>	10,057 <sup>r</sup>	20,449 <sup>r</sup>	21,000 <sup>c</sup>
Gypsum:					
Crude	25,000	25,000	25,000	20,000	20,000
Calcined	5,000	5,000	5,000	3,000	3,000
Lime	924 <sup>r</sup>	-- <sup>4</sup>	1,000	500	500
Pumice and related materials, volcanic tuff	100,000	150,000	150,000	50,000	50,000
Sand and gravel, excluding glass sand thousand cubic meters	130	150	150	100	100
Stone, excluding quartz and quartzite, dimension, crud square meters	190,000	200,000	200,000	150,000	150,000
Ornamental thousand cubic meters	400	400	400	300	300
Crushed and brown, n.e.s. cubic meters	10,000	10,000	10,000	5,000	5,000
Other thousand tons	20,000	29,000	26,000	26,000	25,000
Sulfur, byproduct of metallurgy					
Talc:					
Crude	900	900	800	800	800
Washed	612	695	562	557	550
<b>MINERAL FUELS</b>					
Lignite thousand tons	8,180 <sup>r</sup>	7,500	7,100	6,000	6,000
Petroleum, refinery products thousand 42-gallon barrels	6,000	6,000	6,000	6,000	6,000

<sup>r</sup>Revised. -- Zero.

<sup>1</sup>Estimated data are rounded to no more than three significant digits; may not add to totals shown.

<sup>2</sup>Table includes data available through May 2003.

<sup>3</sup>In addition to commodities listed, common clay also is produced, but available information was inadequate to make reliable estimates of output levels.

<sup>4</sup>Reported figure.

TABLE 8  
MACEDONIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2002

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies	Location of main facilities	Annual capacity <sup>c</sup>
Cement	Azbestcementa "Usje" Preduzece za Proizvodnju Cementa	Plant at Skopje	2,190
Chromite, concentrate	Jugohrom, Hemijsko-Elektrometalurski Kombinat (HEK)	Concentrator at Radusa	150
Copper ore	Bucim, Rabotna Organizacija za Rudarstvo i Metalurgija za Baker	Mine and mill at Bucim, near Radovis	4000
Ferroalloys	Jugohrom, Hemijsko-Elektrometalurski Kombinat (HEK)-Jegunovce	Plant at Jegunovce	80
Iron ore	Skopje, Rudnici i Zeljezarnica Skopje	Mines at Tajmiste, Demir Hisar, and Damjan	1,000
Lead-zinc ore	Prepobotuvacki, Kombinat Zletovo-Sasa: Sase, Rudnici za Olovo i Cink	Mine near Kamenica	300
Do.	Zletovo, Rudnici za Olovo i Cink	Mine and mill near Probistip	700
Lead-zinc, concentrate	Sasa-Makedonska Kamenica Mine (Sase, Rudnici za Olovo i Cink)	Mill near Kamenica	65
Lead metal	Zletovo, Topilnica za Cink i Olovo	Imperial smelter at Titov Veles	40
Do.	do.	Refinery at Titov Veles	40
Nickel: <sup>1</sup>			
Ore	Feni Industries	Mine and opencast mine near Kavadarci	2,300
Metal	do.	Ferronickel plant at Kavadarci	7
Steel, crude	Makstil A.D. Skopje (Duferco Group 54.4%)	Plant at Skopje	260
Zinc metal	Zletovo, Topilnica za Cink i Olovo	Imperial Smelter plant and refinery at Titov Veles	65

<sup>1</sup>Nickel in ferronickel.



TABLE 9  
SERBIA AND MONTENEGRO: PRODUCTION OF MINERAL COMMODITIES<sup>1,2</sup>

(Metric tons unless otherwise specified)

Commodity <sup>3</sup>	1998	1999	2000	2001	2002
<b>METALS</b>					
<b>Aluminum:</b>					
<b>Gross weight:</b>					
Alumina, calcined	152,619	156,012	186,135	185,000 <sup>e</sup>	185,000 <sup>e</sup>
Bauxite	226,000	500,000	630,000	610,000	612,000
Metal, ingot, primary and secondary	60,090	72,505	88,151	100,176	111,689
Antimony, metal	--	--	--	--	--
Bismuth, metal kilograms	430	--	--	--	--
Cadmium do.	17,320	--	--	--	--
<b>Copper:</b>					
<b>Mine and concentrator output:</b>					
Ore, gross weight thousand tons	19,939	15,975	12,896	7,123	7,968
Cu content of ore	84,627	62,777	52,000 <sup>e</sup>	28,000 <sup>e</sup>	32,000
Concentrate, gross weight	372,103	272,172	200,000 <sup>e</sup>	150,000 <sup>e</sup>	185,000 <sup>e</sup>
Concentrate, Cu content	70,900 <sup>r</sup>	69,500 <sup>r</sup>	56,100 <sup>r</sup>	31,000 <sup>r</sup>	36,900
<b>Metal:</b>					
<b>Blister and anodes:</b>					
Primary	101,000	54,000	54,000 <sup>r</sup>	54,000 <sup>r</sup>	54,000
Remelted	101,925	49,782	45,000 <sup>e</sup>	35,000 <sup>e</sup>	30,000 <sup>e</sup>
Total	202,925	103,782	90,000	89,000	84,000
<b>Refined:</b>					
Primary	54,000	49,902 <sup>r</sup>	31,432	22,465	26,897
Remelted	40,396	1,902	14,200 <sup>e</sup>	10,000 <sup>e</sup>	9,000 <sup>e</sup>
Total	94,396	51,804	45,632	32,365 <sup>e</sup>	35,897
Gold, refined kilograms	2,684	1,260	1,121	800 <sup>e</sup>	3,600
<b>Iron and steel:</b>					
Ore and concentrate, agglomerate	5,125	2,088	1,115 <sup>r</sup>	--	--
<b>Metal:</b>					
Ferroalloys, ferronickel	1,215	--	--	--	--
Pig iron	825,916	134,882	563,000	461,000	485,000
Crude steel	948,314	226,240	682,000	598,000	596,000
Semimanufactures	1,740,000	334,000	880,000	801,000	877,000
<b>Lead:</b>					
<b>Mine and concentrate output:</b>					
Ore, gross weight (Pb-Zn ore)	1,248,852	884,000	1,302,000	926,000	577,000
Pb content of ore <sup>e</sup>	24,750 <sup>s</sup>	18,000	26,000	19,000	11,500 <sup>e</sup>
Concentrate, gross weight <sup>e</sup>	32,691 <sup>s</sup>	26,000	38,000	27,000	11,400 <sup>e</sup>
Pb content of concentrate <sup>e</sup>	12,000	8,600 <sup>r</sup>	10,500 <sup>r</sup>	7,500 <sup>r</sup>	4,600
<b>Metal, primary and secondary:</b>					
Smelter	35,576	--	1,500	--	--
Refined	23,756	--	1,242	--	--
Magnesium, metal	3,965	1,203	1,270 <sup>r</sup>	1,500 <sup>r</sup>	1,800 <sup>e</sup>
Nickel, metal, Ni content of Fe Ni	466	--	--	--	--
<b>Platinum-group metals:</b>					
Palladium kilograms	54	21	21 <sup>e</sup>	10	10 <sup>e</sup>
Platinum do.	3	3	3 <sup>e</sup>	1	1 <sup>e</sup>
Selenium do.	40,866	20,080	21,000 <sup>r</sup>	14,000	15,000 <sup>e</sup>
Silver do.	34,474	7,643	9,068 <sup>r</sup>	5,745	6,838
<b>Zinc:</b>					
Zn content of Pb-Zn ore	20,285	14,300 <sup>r,e</sup>	21,000 <sup>r,e</sup>	15,000 <sup>r,e</sup>	9,300 <sup>e</sup>
Concentrator output, gross weight	40,530	11,000 <sup>r,e</sup>	9,500 <sup>r,e</sup>	17,500 <sup>r,e</sup>	20,300 <sup>e</sup>
Zn content of concentrate	14,967 <sup>r</sup>	3,615 <sup>r</sup>	3,266 <sup>r</sup>	5,988 <sup>r</sup>	6,900
Refined	14,415	683	8,291	13,467	1,478

See footnotes at end of table.

TABLE 9--Continued  
SERBIA AND MONTENEGRO: PRODUCTION OF MINERAL COMMODITIES<sup>1, 2</sup>

(Metric tons unless otherwise specified)

Commodity <sup>3</sup>	1998	1999	2000	2001	2002
<b>INDUSTRIAL MINERALS</b>					
Asbestos fiber, all grades	1,452	361	563	194	372
Cement thousand tons	2,253	1,575	2,117	2,418	2,396
Clays:					
Bentonite	68	77	75 <sup>e</sup>	75 <sup>e</sup>	75 <sup>e</sup>
Ceramic clay	40,033	29,420	30,000 <sup>e</sup>	30,000 <sup>e</sup>	30,000 <sup>e</sup>
Fire clay:					
Crude	45,319	25,766	30,000 <sup>e</sup>	30,000 <sup>e</sup>	30,000 <sup>e</sup>
Calcined <sup>c</sup>	10,000	4,000	10,000 <sup>e</sup>	10,000 <sup>e</sup>	10,000 <sup>e</sup>
Kaolin:					
Crude	75,092	40,321	39,475	60,900 <sup>r</sup>	60,000 <sup>e</sup>
Feldspar, crude	4,280	3,453	4,254	4,451 <sup>r</sup>	4,500 <sup>e</sup>
Gypsum, crude	27,778	33,962	46,651	58,045 <sup>r</sup>	55,000 <sup>e</sup>
Lime thousand tons	480	381	499 <sup>r</sup>	467	468
Magnesite:					
Crude do.	949	31	41	36	33
Caustic calcined	7,044	2,000	3,000 <sup>e</sup>	2,500 <sup>e</sup>	2,500 <sup>e</sup>
Mica, all grades	247	229	230 <sup>e</sup>	230 <sup>e</sup>	200 <sup>e</sup>
Nitrogen, N content of ammonia	166,152	75,788	60,000 <sup>e</sup>	65,900	65,000 <sup>e</sup>
Pumice and related volcanic materials, volcanic tuff	120,000	50,000	120,000 <sup>e</sup>	100,000 <sup>e</sup>	100,000 <sup>e</sup>
Quartz sand thousand tons	353	253	418	301	259
Salt, all sources	78,148	63,834	78,277	61,646	42,243
Sand and gravel excluding glass sand thousand cubic meters	3,060	2,006	2,675 <sup>r</sup>	1,967	2,074
Sodium compounds:					
Caustic soda	63,344	13,720	7,415	7,584 <sup>r</sup>	6,787
Sodium sulfate	1,896	1,321	800 <sup>e</sup>	800	800 <sup>e</sup>
Stone, excluding quartz and quartzite, dimension, crude:					
Ornamental square meters	258,000	157,000 <sup>r</sup>	158,000 <sup>r</sup>	84,000	85,000 <sup>e</sup>
Crushed and broken, n.e.s. thousand cubic meters	3,085	1,937	3,000 <sup>e</sup>	3,000 <sup>e</sup>	3,000 <sup>e</sup>
Other, stone blocks cubic meters	1,630	786	1,000 <sup>e</sup>	1,000 <sup>e</sup>	1,000 <sup>e</sup>
Sulfur, byproduct: <sup>c</sup>					
Metallurgy thousand tons	100	100	100 <sup>e</sup>	100	75 <sup>e</sup>
Petroleum do.	1	1	1 <sup>e</sup>	1	1 <sup>e</sup>
Total do.	101	101	101	101	76 <sup>e</sup>
<b>MINERAL FUELS AND RELATED MATERIALS</b>					
Coal:					
Bituminous do.	105	49	88	70	70
Brown do.	390	413	398 <sup>r</sup>	376 <sup>r</sup>	423
Lignite do.	43,577	30,967	31,789 <sup>r</sup>	32,936 <sup>r</sup>	32,995
Total do.	44,072	31,429	32,275	33,382	33,488
Natural gas, gross production million cubic meters	731	143	160	111	107
Petroleum:					
Crude, as reported thousand tons	913	705	805	746	682
Refinery products do.	2,549	1,047	1,052 <sup>r</sup>	1,793 <sup>r</sup>	2,369

<sup>c</sup>Estimated. <sup>r</sup>Revised. -- Zero.

<sup>1</sup>Estimated data are rounded to no more than three significant digits; may not add to totals shown.

<sup>2</sup>Table includes data available through June 2003.

<sup>3</sup>In addition to commodities listed, common clay and diatomite also are produced, and tellurium may be recovered as a copper refinery byproduct, but available information is inadequate to make reliable estimates of output levels.

<sup>4</sup>Less than 0.25 metric ton.

<sup>5</sup>Reported figure.

TABLE 10  
SERBIA AND MONTENEGRO: STRUCTURE OF THE MINERAL INDUSTRY IN 2002

(Thousand of metric tons unless otherwise specified)

Commodity	Major operating companies	Location of main facilities	Annual capacity
Alumina	Kombinat Aluminijuma Titograd	Plant at Titograd, Montenegro	200.
Aluminum	do.	Smelter at Titograd, Montenegro	100.
Antimony, ores and concentrates	Zajaca, Rudarsko Tapioncarski Bazen	Mines and mills near Zajaca, Serbia	80.
Do.	do.	Mines and mill at Rajiceva Gora, Serbia	300.
Antimony, metal	do.	Smelter at Zajaca, Serbia	4.
Bauxite	Rudnici Boksita, Niksic	Mines in Montenegro at Kutsko Brdo, Zagrad, Biocki Stan, Durakov Dol, and other locations	650.
Coal:			
Bituminous	Ibarski Rudnici Kamenog Uglja	Mines at Jarando and Usce, near Baljevac na Ibru, Serbia	250.
Lignite	SOUR Kolubara, Rudarsko Energetsko Industrijski Kombinat, RO	Opencast mines: Polje B and Polje D	10,000.
Do.	Kolubara Povrsinski Kopovi	Tamnavski Kopovi (also known as Kolubarski Rudnici Lignita), near Vreoci, Serbia	14,000.
Do.	SOUR Elektroprivreda Kosova, RO Kosovo, Proizvodnja Separacija i Transport Uglja	Opencast mines: Dobro Selo and Belacevac, near Obilic, Serbia	2,000.
Cement	Becinska Fabrika Cementa	Plant at Beocin, Serbia	2,031.
Do.	Fabrika Cementa Novi Popovac	Plant at Popovac, Serbia	1,613.
Copper	Rudarsko Topionicki Bazen Bor	Smelter at Bor, Serbia	180.
Do.	do.	Electrolytic refinery at Bor, Serbia	180.
Do.	do.	Mine and mill at Bor, Serbia	5,000 ore.
Do.	do.	Mine and mill at Majdanpek, Serbia	15,000 ore.
Do.	do.	Mine and mill at Veliki Krivelj, Serbia	8,000 ore.
Lead-zinc ore	Rudarsko-Metalursko-Hemijski Kombinat za Olovo i Cink Trepca	Mines at Ajvalija, Kopanaonik, Badovac; Trepca, Blagodat, Lece; Veliki Majdan, Tisovak; and Kislina, Rudnik, Suplja Stijena	5,000.
Do.	do.	Mills at Kriva Feja, Lece, Rudnik, Badovac, Leposavic, Zvecan, and Maravce, Suplja Stijena	3,160.
Do.	Hemijska Industrija Zorka:		
	Brskovo, Rudnici Olova i Cinka	Mine at Brskovo, Montenegro	500.
Do.	Veliki Majdan Rudnik Olova i Cinka	Mine at mill near Krupanj, Serbia	250.
Lead, metal	Rudarsko Metalursko Hemijski Kombinat za Olovo i Cink Trepca	Smelter at Zvecan, Serbia	180.
Do.	do.	Refinery at Zvecan, Serbia	90.
Magnesite, concentrate	Rudnici Magnezita "Sumadija"	Mine and plant at Sumadija, 20 kilometers northwest of Cacak, Serbia	120.
Do.	Rudnik i Industrija Magnezita "Strezovce"	Opencast mine at Beli Kamen, Strezovce, near Itiova Metrovica, Serbia	300.
Do.	do.	Sinter plant at Strezovce	40.
Do.	Magnohrom, Rudnik Magnezita "Magnezit"	Mine at Bela Stena, Baljevac na Ibru, Serbia	30.
Natural gas	million cubic feet	Naftaplin (Naftagas), RO za Istrazivanje, i Proizvodnju Nafta i Gasa	Natural gasfields in Serbia Kinkinda and others
Petroleum:			
Crude	thousand barrels per day	Naftagas, Naftna Industrija	Oil fields in Serbia: Kikinda and others
Refined	do.	Naftagas, Naftna Industrija: Rafinerija Nafta Pancevo	Refinery at Pancevo, Serbia
Do.	do.	Rafinerija Nafta Novi Sad	Refinery at Novi Sad, Serbia
Pig iron		Metalurski Kombinat, Smederevo	Blast furnace at Smederevo, Serbia
Steel, crude		do.	Plant at Smederevo, Serbia
Zinc metal		Rudarsko Metalursko Hemijski Kombinat Olova i Cinka Trepca, Metalurgija Cinka	Electrolytic plant at Titova Metrovica, Serbia
Do.		Hemijska Industrija Zorka	Electrolytic plant at Sabac, Serbia

TABLE 11  
SLOVENIA: APPARENT PRODUCTION OF MINERAL COMMODITIES<sup>1, 2</sup>

(Metric tons unless otherwise specified)

Commodity		1998	1999	2000	2001	2002
METALS						
Aluminum, ingot, primary and secondary		73,803	77,200	83,800	76,632	87,600
Iron and steel, metal:						
Ferroalloys:						
Ferrochromium		10,621	560	--	--	--
Ferrosilicocalcium		200	200	200	100	100
Ferrosilicon		10,000	8,000	9,000	9,000	9,000
Crude steel from electric furnaces		405,210	405,000	519,000	462,000	481,000
Semimanufactures		397,000	418,000	466,000	450,000	400,000
Lead, refined, secondary		14,000	14,100	15,300	15,400	13,000
INDUSTRIAL MINERALS						
Cement	thousand tons	1,149	1,224	1,300	1,300	1,250
Clays:						
Ceramic clay, crude		2,500	2,500	2,500	2,500	2,000
Kaolin:						
Crude		10,000	10,000	10,000	10,000	10,000
Lime	thousand tons	150	150	150	150	150
Pumice and related materials, volcanic tuff <sup>c</sup>		40,000	40,000	40,000	40,000	40,000
Quartz, quartzite, glass sand:		210,000	210,000	210,000	200,000	200,000
Salt, all sources		5,000	5,000	5,000	2,000	2,000
Sand and gravel, excluding glass sand	thousand tons	10,292	12,419	12,526	11,510	12,000
Stone, excluding quartz and quartzite, crude: <sup>c</sup>						
Dimension		91,000	104,000	78,000	45,000	50,000
Other	cubic meters	3,000	3,000	3,000	3,000	3,000
MINERAL FUELS AND RELATED MATERIALS						
Coal:						
Brown coal	thousand tons	827	758	737	685	700
Lignite	do.	4,100	3,804	3,743	3,448	3,400
Natural gas	thousand cubic meters	12,500	5,700	6,800	6,100	6,000
Petroleum, crude		900	800	600	700	500

<sup>e</sup>Estimated.

<sup>1</sup>Table includes data available through June 2003.

<sup>2</sup>In addition to commodities listed, common clay, coke, and petroleum products also were produced, but available information is inadequate to make reliable estimates of output levels.

TABLE 12  
SLOVENIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2002

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies	Location of main facilities	Annual capacity
Alumina	Talum d.o.o.	Plant at Kidricevo	120
Aluminum	do.	Smelter at Kidricevo	72
Coal:			
Brown	SOZC, Rudarsko Energetski Kombinat E. Kardelj, Trobovlje, Slovenia	Mines: Sasavski Rudnici at Trbovlje, Hrastnik, Ojstro, Senovo, and Kanizarnica	1300
Lignite	Rudarsko Energetski Kombinat Velenje, RO Rudnik Lignita-Velenje	Mine at Velenje	5000
Cement	Salonit Anhovo	Plant at Anhovo	1120
Lead metal	Rudnik Svinca in Topilnica, Mezica	Smelter at Mezica	35
Do.	do.	Refinery at Mezica	30
Petroleum, refined	Industrija Naft (INA) Rafinerija Naft Lendava	Refinery at Lendava	16
Pig iron	Združeno Podjetje Slovenske Železarne	Two blast furnaces at Želazara Jesenice	300
Do.	Želazara Store	Electric reduction furnaces at Store pri Celju	290
Steel, crude	Združeno Podjetje Slovenske Železarne	Plant at Jesenica	500
Do.	do.	Plant at Ravne	162
Do.	do.	Plant at Store	140